

VII

BIRDS OF LAGUNA OCOTAL

By

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INTRODUCTION

An investigation of the avifauna was one of the primary objectives of the Museum of Comparative Zoology expedition to the Selva Lacandona, Chiapas. Between July 21 and August 19, 1954, while at Laguna Ocotal (alt. 950 m.), 490 birds were prepared as skins. While these specimens are a good sample of the resident avifauna, there can be little doubt that additional species occur in the region but were not observed. In a heavily forested region collecting is difficult even under the most favorable conditions. We were at work at the end of the breeding season when most birds are silent and secretive—obviously the most difficult collecting period.

The following list is based on the specimens collected, as well as on unequivocal field observations. The specimens were weighed on a double-pan balance. The means of the measurements are accompanied by their standard errors (σ_m). The Hippoboscidae (bird-flies) were identified by Joseph C. Bequaert.

ANNOTATED LIST

TINAMUS MAJOR ROBUSTUS Selater and Salvin

1 ♀, Aug. 7.

The species was heard on a few occasions and seen twice. The bird weighed 1090.5 grams.

CRYPTURELLUS BOUCARDI BOUCARDI (Selater)

1 ♀, July 22; 1 ♂, Aug. 10; 1 ♂, Aug. 11.

Although by no means common, this is the more abundant tinamou. Occasionally it was found in the tropical evergreen forest but it occurred principally in the *monte*. The males weighed 291.4 and 403.3 grams; the female 351.0 grams.

PHALACROCORAX BRASILIANUS MEXICANUS (Brandt)

1 ♂, July 30.

On an undisturbed lake one would expect to find water birds in abundance, but the cormorant was the only exclusively aquatic form and even they were in small flocks. The weight of the bird was 1165.0 grams.

BUTORIDES VIRESCENS VIRESCENS (Linnaeus)

1 ♀, Aug. 11.

The specimen is immature and weighed 93.1 grams. Green Herons were uncommon.

SARCORAMPHUS PAPA (Linnaeus)

One was observed, within a flock of Turkey Vultures, on August 3.

CATHARTES AURA subsp.

A few vultures came to the camp at irregular intervals.

ELANOIDES FORFICATUS subsp.

Two kites were noted on July 26 and three on August 1.

ACCIPITER STRIATUS subsp.

A single individual flew back and forth over the lake on August 16. It would seem an early date for a migrant. Probably the bird was a resident, possibly *A. s. chionogaster*.

BUTEOGALLUS URUBITINGA RIDGWAYI (Gurney)

1 ♂, Aug. 15.

This is the only example of the species which was seen. It harbored three species of Hippoboscidae: *Ornithoctona erythrocephala*, *Lynchia angustifrons*, and *L. wolcotti*.

I concur with Amadon (1949), and Amadon and Eckelberry (1955), that the genera *Hypomorphnus* and *Buteogallus* should be united.

SPIZAËTUS TYRANNUS subsp.

Paine, on August 17, saw a single Black Eagle-Hawk in the *selva*.

HERPETOTIHERES CACHINNANS subsp.

Laughing Falcons were heard several times.

MICRASTUR SEMITORQUATUS NASO (Lesson)

1 ♀, Aug. 17.

Although the dense, undisturbed, forests surrounding the lake appeared ideally suited for certain of the birds of prey, such as those of the genera *Micrastur*, *Spizastur*, and *Spizaëtus*, hawks were excessively rare. Only one example of *M. semitorquatus* was seen. It was host to the bird-flies *Ornithoctona erythrocephala* and *Lynchia wolcotti*, and weighed 749.8 grams.

MICRASTUR RUFICOLLIS GUERILLA Cassin

1 ♂, Aug. 14.

The specimen was taken in the low forest near the edge of the lake. On several occasions others were found in the thickest parts of the evergreen forest.

FALCO RUFIGULARIS subsp.

On August 10 a pair of Bat Falcons flew near the camp, where they could be seen distinctly.

CRAX RUBRA RUBRA Linnaeus

1 ♂, 1 ♀, Aug. 8; 1 ♀, Aug. 15.

Curassows were fairly abundant but not so numerous as guans. The specimen collected on August 15 is about one-third grown.

PENELOPE PURPURASCENS PURPURASCENS Wagler

1 ♂?, July 24.

Guans were common, ranging through all types of forest, but were most abundant where the pine and broadleaf forests met. In

the early morning they were often perched in the pines where apparently they had spent the night. *Ornithoctona erythrocephala* was taken from the specimen.

ORTALIS VETULA VETULA (Wagler)

1 ♂, July 26; 1 ♀, Aug. 1; 1 ♂, Aug. 6; 1 ♀, Aug. 7; 1 ♀, Aug. 8;
2 ♂, 1 ♀, Aug. 10; 1 ♂, Aug. 14; 2 ♀, Aug. 15; 1 ♂, 3 ♀, Aug. 16.

Chachalacas were very abundant in the transition zone between the broadleaf forest and the pines, and in the *monte* at the end of the lake. Specimens of *Ornithoctona erythrocephala* were obtained from four birds and *Lynchia plaumanni* from one. Six males ranged in weight from 319.1 to 448.5 grams, with a mean of 402.30 ± 16.82 ; nine females from 309.6 to 394.8, with a mean of 356.21 ± 10.31 grams.

ODONTOPHORUS GUTTATUS (Gould)

2 ♂, July 25; 1 ♀, July 30; 1 ♀, Aug. 12.

Wherever the floor of the forest is dark these birds were seen with fair regularity. The two males weighed 284.0 and 286.9 grams; the two females 314.1 and 316.3 grams.

ARAMUS GUARAUNA DOLOSUS Peters

1 ♀, Aug. 1; 1 ♀, Aug. 11.

There seems to be no specific record of the species in Chiapas, although Alvarez del Toro (1952) mentions that it is abundant in the state. The shores of the lake are strewn with the empty shells of the snail *Pomacea flagellata*, the preferred food of limpkins, suggesting the presence of many of these birds. However, none was heard and just a few lone individuals were seen.

ARAMIDES CAJANEA subsp.

A wood rail called in the evening of July 30. This is another species which had been expected to occur in large numbers but which was inexplicably rare.

LATERALLUS RUBER (Selater and Salvin)

1 ♂, 1 ♀, July 21.

In the marshes near the camp, Ruddy Rails abounded, although they were seldom seen. Their call is a rattle, similar to that of a

small kingfisher, but somewhat slower. The male is an adult and weighed 49.0 grams. The female retains a portion of the immature plumage and weighed 40.5 grams. Elsewhere (Paynter, 1955) I have given my reasons for recognizing no subspecies of *L. ruber*.

COLUMBA NIGRIROSTRIS Selater

1 ♂, Aug. 4; 1 ♂, 1 ♀, Aug. 7; 1 ♂, Aug. 11; 1 ♂, Aug. 12; 1 ♀, Aug. 15.

Short-billed Pigeons were heard frequently, and sometimes could be seen in the tallest trees of the broadleaf forest. The specimens, however, were taken principally in the low forest and edges where they came to feed in fruiting trees.

The males weighed 154.3, 154.4, 159.0, and 166.1 grams; the females 132.5 and 148.2 grams.

LEPTOTILA CASSINII CERVINIVENTRIS Selater and Salvin

1 ♂, July 22; 1 ♀, July 25; 1 ♂, July 30; 1 ♂, July 31.

Although the species has been recorded in Mexico only from Santa Rosa, Comitán, Chiapas (Berlioz, 1939) and from two localities on the Río Usumacinta in Tabasco (Brodkorb, 1943), it was reasonably abundant in the deep forest at Laguna Ocotal. The apparent absence of *Leptotila verreauxi* and *L. plumbeiceps*, species which are widely distributed in southern Mexico, was surprising. However, most forms of *Leptotila* are secretive and difficult to collect and I would feel certain of the absence of these species only if more time had been spent in the field.

Two adult males and a female weighed 167.2, 176.5, and 152.1 gram, respectively; a female in juvenal plumage 138.0 grams.

ARA MACAO (Linnaeus)

Small flocks of Scarlet Macaws flew over quite regularly in the morning and evening. They did not seem to feed in the vicinity of the lake and, as a consequence, alighted rarely, and then only in the tops of tall pines or on conspicuous dead trees in the *selva*.

PIONUS SENILIS SENILIS (Spix)

1 ♀, Aug. 14; 1 ♀, Aug. 16.

Although parrots passed over each day at dawn and dusk, they were nearly absent from the forest surrounding Laguna Ocotal. Late in our stay a small flock of *Pionus senilis* began to roost for the night in the pines at the edge of the broad-leaf forest on the eastern side of the lake. It is from this group that the specimens were secured. The birds weighed 220.4 and 221.5 grams.

The genus *Amazona* was represented in the flocks of parrots seen in the air. *A. ochrocephala* was tentatively identified, but another species seemed to be present also; there may have been still others.

PIAYA CAYANA subsp.

On August 12 there was a Squirrel Cuckoo in the top of a pine standing in small clearing. No other was observed.

NYCTIDROMUS ALBICOLLIS YUCATANENSIS Nelson

1 ♂, July 29; 1 ♂, Aug. 10; 1 ♀, Aug. 17.

Common within the burned area in the pines. The males weighed 65.5 and 68.5 grams; the female 74.5 grams.

PHAETHORNIS SUPERCILIOSUS LONGIROSTRIS (DeLattre)

1 ♀, July 31; 1 ♂, Aug. 9.

No approach to *P. s. veraecrucis* is exhibited by the specimens, although birds from Palenque, which is about 100 kilometers to the north, either were referred to that race (Brodkorb, 1943, Tashian, 1952) or said to be intermediate (Friedmann, Griscom, and Moore, 1950). The weight of the male was 6.4 grams; that of the female 5.9 grams. Dressler reported seeing one of these hummingbirds feeding at a dwarf *Heliconia* (*H. tortuosa* Griggs), a plant with red bracts and long, curved, yellow flowers, for which the bird's bill is well suited.

ABEILLIA ABEILLEI ABEILLEI (Lesson and DeLattre)

1 ♀, July 27; 1 ♂, 1 ♀, Aug. 8.

The female weighed 3.5 grams; the male, which is immature, 3.0 grams. No adult males were seen.

AMAZILIA CANDIDA CANDIDA (Bourcier and Mulsant)

1 ♀, July 24; 1 ♂, Aug. 11.

The male and female weighed 3.8 and 3.6 grams, respectively. This species and the females and immature males of *Abeillia abeillei* were impossible to differentiate in the field; their relative abundance is not known. Among the least common hummingbirds, they occurred in the high broadleaf forest in localities where the sun reaches the ground and encourages the growth of flowering plants and shrubs.

AMAZILIA BERYLLINA DEVILLEI (Bourcier and Mulsant)

1 ♂, Aug. 11.

The specimen displays none of the characters ascribed to *A. b. lichtensteini* or to the nominate race and is, therefore, the first record of *A. b. devillei* from the Atlantic slope of Chiapas. It was taken in the tropical evergreen forest and was the only example seen. It weighed 4.6 grams.

EUPHERUSA EXIMIA EXIMIA (DeLattre)

1 ♂, July 24; 1 ♂, 1 ♀, July 25; 1 ♂, July 26; 1 ♀, July 27; 1 ♂, July 29; 2 ♂, July 30; 1 ♂, 1 ♀, Aug. 1; 2 ♂, Aug. 2; 2 ♀, Aug. 3; 1 ♂, Aug. 4, 1 ♂, Aug. 6; 1 ♂, Aug. 7; 2 ♂, Aug. 8; 1 ♀, Aug. 9; 2 ♂, Aug. 10; 1 ♂, Aug. 13; 1 ♀, Aug. 14; 1 ♂, Aug. 16; 1 ♀, Aug. 17; 1 ♂, Aug. 19.

Where there were plants flowering in the tall broadleaf forest this hummingbird was almost always present. It was by far the most common Trochilid. Twenty males ranged from 3.5 to 4.7 grams, with a mean of $4.18 \pm .06$; seven females from 3.0 to 4.0 grams, with a mean of $3.65 \pm .14$.

LAMPORNIS VIRIDI-PALLENS VIRIDI-PALLENS (Bourcier and Mulsant)

1 ♂, July 23; 2 ♂, 1 ♀, July 27; 1 ♀, July 31; 1 ♂, Aug. 1; 1 ♀, Aug. 5; 1 ♀, Aug. 6; 1 ♂, Aug. 9; 2 ♂, Aug. 11.

These hummingbirds occurred in the same biotope as *Eupherusa eximia* and were almost as numerous.

I have examined 15 specimens of the species from and near

Mt. Ovando, Chiapas, the type locality of *L. v. ovandensis*, and conclude that, although recognizable, it is an extremely weak race. The coloration of the dorsal surface is variable and no consistent difference between the two races is distinguishable. The bill length is also inconstant; there appears to be a complete overlap between the forms in this character. The only differentiating features I can appreciate are the faintly lighter abdomen and slightly greater area of white on the lower throat of *L. v. ovandensis*.

Seven males ranged in weight from 5.3 to 6.5 grams, with a mean of 5.80 ± 0.14 grams. Four females weighed 4.7, 4.7, 4.8, and 5.2 grams.

TROGON MASSENA subsp.

A single bird was seen on August 15 in a fruiting tree at the edge of the pines.

TROGON COLLARIS PUELLA Gould

1 ♂, July 21; 1 ♀, Aug. 5; 1 ♂, Aug. 12.

Within the heavy forest this species was noted with regularity, but it was uncommon.

The males weighed 63.7 and 64.5 grams; the females 63.4 grams. It is of interest to compare these weights with those obtained on the Yucatán Peninsula (Paynter, 1955). There two males weighed 47.6 and 53.5 grams, and two females 41.1 and 53.9 grams. This suggests that the Peninsular birds are smaller in mass, although no differences in linear measurements are evident. A larger series is needed to confirm the proposal.

TROGON VIOLACEUS BRACCATUS (Cabanis and Heine)

1 ♀, Aug. 6.

The specimen, the only one of the species seen, was collected in the transition forest. It weighed 57.1 grams.

CHLOROCERYLE AMERICANA SEPTENTRIONALIS (Sharpe)

1 ♂, July 25; 1 ♀, Aug. 3; 1 ♀, Aug. 5; 1 ♂, Aug. 9.

Two adult females and a male weighed 40.7, 43.1, and 39.7 grams, respectively; an immature male 37.3 grams.

CHLOROCERYLE AENEA STICTOPTERA (Ridgway)

1 ♀, Aug. 10; 1 ♂, Aug. 11; 1 ♂, Aug. 15.

Both species of kingfisher were common. The two males weighed 15.5 and 16.8 grams, the female 20.8 grams.

HYLOMANES MOMOTULA MOMOTULA Lichtenstein

1 ♂, Aug. 2; 1 ♂, 1 ♀, Aug. 3; 1 ♀?, Aug. 7.

These small motmots were seldom seen, but because of their silent, sluggish behavior may have been more numerous than it appeared.

The two males weighed 32.5 and 32.7 grams; the female 29.7 and the bird of doubtful sex 31.0 grams. None possessed more than a trace of fat. Van Tyne (1935) gave the weight of five males from Petén as ranging from 27.0 to 28.5 grams, and noted that the heaviest bird was fatty; two females weighed 26.5 and 27.5 grams. The apparent difference in weight between the two populations should be investigated when more data are available.

MOMOTUS MOMOTA LESSONII Lesson

1 ♂, Aug. 6.

No more than ten of these birds were seen during the period spent at the lake. The specimen weighed 131.6 grams, which is considerably heavier than the previously reported maximum of 119.5 grams (Van Tyne, 1935).

Tashian (1952) listed *M. m. goldmani* from Palenque, but gave no reason for resurrecting the race which Van Tyne (1935), Wetmore (1943), and Berlioz (1952), have shown to be synonymous with *M. m. lessonii*. I, too, am unable to appreciate the supposed characters of *M. m. goldmani*.

PTEROGLOSSUS TORQUATUS TORQUATUS (Gmelin)

1 ♂, Aug. 3; 1 ♂, Aug. 11.

The birds weighed 209.5 and 221.0 grams, further strengthening Van Tyne's (1935) assertion that the nominate race is markedly heavier than *P. t. erythrozonus*. The maximum and minimum weights recorded for *P. t. erythrozonus* are: males,

177.0 (Van Tyne, 1935) and 169.2 grams (Paynter, 1955); females, 181.1 (Paynter, 1955) and 147.0 grams (Van Tyne, 1935). Those for the nominate form are: males 240.0 and 209.5 grams (Van Tyne, 1935); female (only record) 230.0 grams (Van Tyne, 1935).

Araçaris were fairly common.

RAMPHASTOS SULFURATUS SULFURATUS Lesson

1 ♂, July 30; 1 ♂, Aug. 18.

This large toucan was more abundant than *Pteroglossus torquatus*.

Van Tyne (1935) found, in Petén, the weights of males of the race range from 362.0 to 449.5 grams. These specimens weighed 483.5 and 496.4 grams and are apparently the heaviest yet recorded.

PICULUS RUBIGINOSUS YUCATANENSIS (Cabot)

1 ♂, July 23; 1 ♀, Aug. 15.

The specimens collected were the only ones seen. They exhibited no approach toward *P. r. maximus* of the mountains of Chiapas and Guatemala. The male weighed 83.0 and the female 75.4 grams.

CENTURUS PUCHERANI PERILEUCUS (Todd)

1 ♀, July 29; 1 ♂, Aug. 18; 1 ♀, Aug. 19.

Within the pines this species was moderately numerous, but it usually ranged in the tops of the trees, out of gunshot. One of the specimens was collected in the pines and the other two in the zone of transition between the pine and broadleaf forests. It was rare, however, in the latter locality. The weight of the male was 53.0 grams; that of the females 48.9 and 49.4 grams.

Amadon and Eckelberry (1955), in commenting on the failure of many authors to unite *Centurus* with *Melanerpes*, as was done by Peters (1948), state that “. . . the barred (*sic*) immature plumage of the Red-headed Woodpecker (*M. erythrocephalus*) and the color pattern of *M. portoricensis*, do tie the two groups together.” I fail to appreciate this. The plumage of the immature *M. erythrocephalus* is streaked, not barred, and notably

similar to that of the adult Acorn Woodpecker (*M. formicivorus*). No species of *Centurus* approximates such a condition.

M. portoricensis, an insular species presumably at the end of an evolutionary line, rather than a link, bears no resemblance to the *Centurus* group, with the exception of its red abdomen and brown sides. Dorsally it is similar to *M. formicivorus* with a glossy black back, white rump, and white forehead; it lacks only the red head of that species (and of *Centurus*). Its behavior is said to be like that of the Acorn Woodpecker (Wetmore, 1927). The coloration of the throat and upper chest of *M. portoricensis* is similar to that of *M. erythrocephalus*, even to the remnant of a black pectoral band. The extension of red to the abdomen, when the chest is red, is a small evolutionary step and is certainly a logical explanation for the existence of this character in *M. portoricensis*.

Thus, the only real similarity between this species and the *Centurus* group is the brown coloration of the sides. It seems most likely that this character was acquired independently by an *M. formicivorus*-like progenitor, which was isolated in the Antilles. Alternative explanations are that *M. portoricensis* is a primitive species exhibiting the first indications of the divergence of *Centurus* from *Melanerpes*, or, that *Centurus* is the older group and *M. portoricensis*, retaining only its brown sides, betrays the origin of *Melanerpes*. These are obviously spurious hypotheses.

It is unexpected that Amadon and Eckelberry (1955) should accept the unification of *Centurus* and *Melanerpes*, but maintain *Tripsurus*, a genus also reduced to the synonymy of *Melanerpes* by Peters (1948). It is true that the species usually placed within *Tripsurus* are separated from *Centurus* (*sensu stricto*) by gaps greater than those existing between most species of *Centurus*, but I believe the group is not of generic rank and is best considered a subgenus of *Centurus*.

VENILIORNIS FUMIGATUS SANGUINOLENTUS (Selater)

1 ♂, Aug. 4; 1 ♂, Aug. 6; 1 ♂, Aug. 12; 1 ♂, Aug. 15; 1 ♀, Aug. 17.

Where trees have fallen in the broadleaf forest, and on the edges of other clearings, there is usually a stand of shrubs and young trees. It is in such a habitat that this woodpecker is found. It is, therefore, localized and uncommon.

The female weighed 29.3 grams and the males 32.0, 34.1, 35.0, and 39.3 grams.

PHLOEOCEASTES GUATEMALENSIS GUATEMALENSIS (Hartlaub)

1 ♂, 2 ♀, July 31; 1 ♀, Aug. 2; 1 ♂, Aug. 8.

An abundant resident in the high forest. The males weighed 234.0 and 237.0 grams; the females 222.5, 223.0, and 226.4 grams.

DENDROCINCLA ANABATINA ANABATINA Selater

1 ♂, July 23; 1 ♂, Aug. 7; 1 ♂, Aug. 11; 1 ♂ ♀, Aug. 17.

There appears to be no specific record of this species in the state. Alvarez del Toro (1952), however, has included it in his book. The weight of three males was 34.2, 37.3, and 38.3 grams.

DENDROCINCLA HOMOCIROA HOMOCIROA (Selater)

1 ♀, July 23; 1 ♀, July 25; 1 ♀, Aug. 9.

Two males weighed 33.8 and 35.5 grams. Both species of *Dendrocincla* were present in moderate numbers and seemed about as common as I have found them in the rain forest of the Yucatán Peninsula.

SITTASOMUS GRISEICAPILLUS SYLVIODES Lafresnaye

1 ♀, July 23; 1 ♀, July 24; 1 ♂, 1 ♀, July 25; 1 ♂, Aug. 4; 1 ♀, Aug. 5; 1 ♂, Aug. 8; 1 ♀, Aug. 12; 1 ♀, Aug. 13; 1 ♂, 1 ♀, Aug. 14; 1 ♀, Aug. 16; 2 ♀, Aug. 17; 1 ♀, Aug. 18; 1 ♂, Aug. 19.

The linear dimensions of *S. g. sylvioides* and *S. g. gracileus* have been shown to be markedly different (Paynter, 1955). It is not unexpected that a substantial difference in the average weight of the races also can be demonstrated. The weight of five males of *S. g. sylvioides* from Laguna Ocotal ranged from 12.8 to 14.2 grams, with a mean of 13.52 ± 0.21 ; that of six females from 11.1 to 13.8 grams, with a mean of 12.53 ± 0.12 . On the Yucatán Peninsula, where *S. g. gracileus* is found, seven males ranged from 9.0 to 12.1 grams, with a mean of 11.01 ± 0.35 ; four females from 8.6 to 10 grams, with a mean of 9.25 ± 0.34 (Paynter, 1955).

Within the *selva* this was the most abundant of the Dendrocapitidae.

DENDROCOLAPTES CERTHIA SANCTI-THOMAE (Lafresnaye)

1 ♀, July 26; 1 ♀, Aug. 9; 1 ♂, Aug. 13.

A bird of the high evergreen forest, but at times seen on the trunks of pines when they were adjacent to its preferred habitat. No woodhewer was more shy.

When more birds have been weighed there may be evident a difference in mass between this subspecies and *D. c. legtersi* of the Yucatán Peninsula. The male and the two females weighed, respectively, 67.3, 66.0, and 68.3 grams. Tashian (1952) found a female to weigh 63.0 grams. Paynter (1955) recorded two males of *D. c. legtersi* as weighing 52.7 and 60.8 grams, and three females of *D. c. sancti-thomae*, which exhibited an approach toward the Yucatán Peninsula endemic, as 54.3, 55.9, and 61.3 grams.

XIPHORHYNCHUS ERYTHROPYGIUS PARVUS Griscom

1 ♀, 1 ?, July 27; 2 ♀, July 31. 2 ♀, 1 ?, Aug. 1; 1 ♀, Aug. 3; 1 ♂, Aug. 4; 1 ♂, Aug. 5; 1 ♀, Aug. 6; 1 ♀, Aug. 7; 1 ♂, Aug. 16; 1 ♀, Aug. 17; 1 ?, Aug. 18.

Nine females ranged in weight from 39.7 to 43.7 grams, and had a mean of 41.78 ± 0.43 grams. Three males weighed 43.0, 44.0, 44.9 grams. These were abundant birds in the broadleaf forest and occasionally ranged to the edge of the pines.

LEPIDOCOLAPTES SOULEYETH INSIGNIS (Nelson)

2 ♀, July 26; 1 ♀, Aug. 16; 1 ♂, Aug. 18.

L. affinis and the present species occurred sympatrically in the pines. They are morphologically so similar it was not possible to distinguish them in the field; their relative abundance is unknown. As an aggregate, however, they were not common.

An adult male and two females weighed 30.8, 29.8, 30.9 grams, respectively; a juvenal female 30.7 grams.

LEPIDOCOLAPTES AFFINIS AFFINIS (Lafresnaye)

1 ♀, Aug. 5.

It is regrettable that it was not possible to study the species carefully while in the field. *L. souleyetii* is a lowland form which usually occurs in rain forest, while *L. affinis* is found in pines or

other types of forest characteristic of the highlands. The fact that at Laguna Ocotal *L. souleyetii* abandoned the broadleaf forest for the pines suggests that it may have found a more easily exploitable niche within the conifers. Neither species was common and probably they were able to exist sympatrically without competing.

The specimen weighed 27.6 grams.

ANABACERTHIA STRIATICOLLIS VARIEGATICEPS (Selater)

1 ♂, Aug. 2.

The specimen, which was the only one seen, weighed 23.6 grams.

AUTOMOLUS OCHROLAEMUS CERVINIGULARIS (Selater)

1 ♂, July 31; 1 ♂, Aug. 2; 1 ♂, Aug. 3; 1 ♂, Aug. 5; 1 ♂, Aug. 6;
2 ♀, Aug. 7; 1 ♀, Aug. 10; 2 ♂, 2 ♀, Aug. 17.

None of the Furnariidae was more abundant than this species, which was a conspicuous element of the heaviest *selva*.

Seven males ranged in weight from 44.7 to 50.4 grams, with a mean of 47.34 ± 0.87 ; five females from 37.5 to 44.0 grams, with a mean of 40.48 ± 1.12 .

XENOPS MINUTUS MEXICANUS Selater

1 ♀, Aug. 5; 1 ♀, Aug. 16.

Very few Plain Xenops were present. The birds weighed 10.5 and 11.8 grams.

SCLERURUS MEXICANUS MEXICANUS Selater

1 ♂, July 23; 1 ♀, July 24; 1 ♀, July 27; 1 ♀, Aug. 17.

These birds were seen on the average of about once a day in the most dense forest. The weight of the male and three females was 28.0, 25.0, 26.6, and 30.0 grams, respectively.

THAMNOPHILUS DOLIATUS INTERMEDIUS Ridgway

1 ♀, July 29; 1 ♂, Aug. 4; 1 ♂, Aug. 18.

Antshrikes were restricted to the *monte* and thickets at the end of the lake. The male taken on August 4 had enlarged testes and was one of the few birds collected which showed indications of reproductive activity. The males weighed 28.4 and 28.8 grams; the female 30.0 grams.

DYSITHAMNUS MENTALIS SEPTENTRIONALIS Ridgway

2♂, 1♀, July 24; 1♂, July 31; 1♂, Aug. 3; 1♀, Aug. 6.

Traylor (1941) collected two examples of this species in southern Campeche, adding the species to the known Mexican avifauna. At Laguna Ocotal, it was common, and often associated with *Myrmotherula schisticolor*, in the shrubs bordering trails through the thickest parts of the deciduous forest.

Three of the males are immature and weighed 11.6, 12.7, and 13.5 grams. An adult male and two females weighed 13.6, 12.9, and 13.8 grams, respectively.

MYRMOTHERULA SCHISTICOLOR SCHISTICOLOR (Lawrence)

1♂, July 24; 1♀, Aug. 6; 1♂, Aug. 14; 1♀, Aug. 16; 1♂, 1♀, Aug. 17.

Berlioz (1939) recorded seven specimens from Santa Rosa in the district of Comitán; no other record from Mexico is known. It seemed to be localized in the forest, but often occurred in loose flocks. The respective weights of three males and three females were 7.3, 9.2, 9.2, 8.5, 8.8, and 9.6 grams.

FORMICARIUS ANALIS MONILIGER Sclater

1♂, Aug. 18.

Antthrushes were noted only four times but undoubtedly were more abundant than it seemed. On the Yucatán Peninsula I found them exceedingly difficult to collect during the wet season, but when the forest was dry they were heard moving about in the leaves, much like tinamous, and could be taken with little difficulty. The specimen from Laguna Ocotal was snared in a trammel net in the *monte*, although previously the species had been seen only in the high forest. It weighed 51.3 grams.

GRALLARIA GUATIMALENSIS GUATIMALENSIS Prevost and Des Murs

1♂ Aug. 1.

Only this bird was seen. Its weight was 99.0 grams.

ATTLA SPADICEUS FLAMMULATUS Lafresnaye

1♀, July 24.

This specimen came to a fruiting tree (*Clusia* sp.) at the camp. It was the only one noted during the month at the lake. It weighed 44.2 grams.

PLATYPSARIS AGLAIÆ SUMICHRASTI Nelson

1 ♂, July 27.

The bird is almost in full adult plumage and weighed 31.5 grams. It was taken in the *monte*. No others were seen.

TITYRA SEMIFASCIATA PERSONATA Jardine and Selby

2 ♂, Aug. 9.

Masked Tityras were observed on a few occasions in the tops of pines or broadleaf trees. The birds weighed 77.9 and 86.3 grams.

PIPRA MENTALIS MENTALIS Selater

1 ♂, July 26; 1 ♀, Aug. 2; 1 ♀, Aug. 3; 1 ♂, Aug. 5; 2 ♀, Aug. 6; 1 ♂, Aug. 15; 1 ♀, Aug. 16; 1 ♂, Aug. 18.

One of the females collected on August 16 is a fledgling barely able to fly. This species is among the latest breeders found in the region and also was one of the most common birds wherever there were bushes and small trees in the broadleaf forest. Adult males made up about one quarter of the birds seen.

Adult males weighed 17.8, 17.9, and 19.1 grams; an immature male 15.8 grams; adult females 16.6, 17.1, 17.2, and 17.4 grams; a juvenal female 17.4 grams.

SCIFFORNIS TURDINUS VERAÆ-PACIS (Selater and Salvin)

1 ♀, Aug. 2; 1 ♀, Aug. 8; 1 ♂, Aug. 17.

Few of these manakins were in the area. The male and the two females weighed 32.1, 32.3, and 32.7 grams, respectively.

TYRANNUS MELANCHOLICUS CHLORONOTUS Berlepsch

1 ♂, 1 ♀, Aug. 4.

The paucity of clearings made this a very uncommon species. The few birds seen were in the pine burn or at the edge of the lake. The male weighed 41.4 grams; the bird whose sex could not be determined 36.1 grams.

MEGARHYNCHUS PITANGUA MEXICANUS (Lafresnaye)

1 ♀, Aug. 3; 1 ♂, Aug. 13.

As uncommon a bird as *Tyrannus melancholicus* and apparently for the same reasons. The weights of the male and female were 65.4 and 66.3 grams, respectively.

MYIOZETETES SIMILIS TEXENSIS (Giraud)

1 ♀, Aug. 6; 1 ♀, Aug. 13.

Slightly more abundant than the preceding two species. The specimens weighed 28.0 and 33.9 grams.

MYIARCHUS TUBERCULIFER CONNECTENS Miller and Griscom

1 ♂, July 26; 1 ♀, Aug. 5; 1 ♂, Aug. 10; 2 ♀, Aug. 12; 1 ♂, Aug. 18.

The specimens from Laguna Ocotal are referable to *M. t. connectens*, although they are rather small and fall within the upper size range of a series of 24 specimens of *M. t. platyrhynchus*, the smallest of the races, from the Yucatán Peninsula. They are, however, dark dorsally and have varying amounts of rufous on the underside of the rectrices, two characters distinguishing *M. t. connectens* from *M. t. platyrhynchus*. The race seems not to have been reported from Chiapas, although it is to be expected along the northern and northeastern Guatemalan border.

Recently (1955) I noted that one character distinguishing *M. tuberculifer* from *M. yucatanensis* is its horn-colored, rather than black, bill. It was not realized at the time that the lighter colored bill is not always found in *M. tuberculifer*. *M. t. connectens* and *M. t. lawrenceii* occasionally have horned-colored bills, but in the vast majority it is black. On the other hand, within the remaining races horn-colored bills are frequent and black bills are somewhat of an exception; only *M. t. platyrhynchus*, and apparently *M. t. nigricapillus*, seem to have consistently light bills.

Enough data have accumulated so that a slight difference in weight between several races seems to be evident. Six males of *M. t. platyrhynchus* ranged from 14.7 to 19.7, with a mean of 17.15 ± 0.74 grams; females of the race weighed 15.0, 16.0, 17.3, and 17.9 grams (Paynter, 1955). *M. t. connectens* has larger linear dimensions and the specimens from Laguna Ocotal suggest that heavier weight may be an added character. Three males weighed 19.0, 19.9, and 19.2 grams, a female 19.2 grams, and two birds of undetermined sex 18.0 and 19.1 grams. *M. t. lawrenceii*, the race with the greatest linear dimensions of the three, may also weigh the most. Paynter (1955) recorded males from Ocozocoautla, Chiapas as weighing 21.8 and 22.5 grams; Martin, Robins, and Heed (1954) found males in Tamaulipas

to weigh 21 and 22 grams. Females from Chiapas (Paynter, 1955) weighed 20.0 and 22.0 grams.

CONTOPUS PERTINAX PERTINAX Cabanis and Heine

1 ♀, Aug. 5.

Greater Pewees were restricted to the *acotal* where they were uncommon and much more shy than I have found them elsewhere. The bird was in heavy molt and weighed 22.0 grams.

EMPIDONAX MINIMUS (Baird and Baird)

1 ♂, Aug. 10.

Although this is an early date for the species, Tashian (1952) has recorded it at Palenque, Chiapas on August 6. The specimen weighed 10.6 grams.

EMPIDONAX FLAVESCENS DWIGHTI van Rossem

1 ♂, July 31; 1 ♀, Aug. 13.

One bird was taken in the pines, where it was to be expected, but the other was in the dense broadleaf forest. No more were seen. The weight of the male was 12.4 and that of the female 12.2 grams.

MYIOBIUS BARBATUS SULPIUREIPYGIUS (Selater)

1 ♂, July 29; 1 ♀, 1 ♀, July 31; 1 ♂, Aug. 4; 2 ♀, Aug. 8; 1 ♂, 1 ♀, Aug. 10; 1 ♂, Aug. 13; 1 ♂, Aug. 14; 1 ♀, Aug. 16.

The species was a conspicuous constituent of the *selva*. Five males ranged in weight from 12.5 to 13.3 grams, with a mean of 12.92 ± 0.15 grams. Three females weighed 9.1, 9.9, and 10.4 grams.

ONYCHORHYNCHUS CORONATUS MEXICANUS (Selater)

1 ♂, Aug. 17.

The specimen was the only individual observed. It weighed 21.4 grams.

PLATYRINCHUS MYSTACEUS CANCROMINUS Selater and Salvin

1♂, July 21; 1♂, July 24; 2♂, 1♀, 1?, July 27; 1♂, 1♀, 1?, July 31; 1♂, Aug. 9; 1♀, Aug. 13.

Some of the birds show a reduction in the streaking on the abdomen, indicating an approach toward *P. m. timothei*, but they are very richly colored, have breast bands, etc. — characters of *P. m. cancrominus*. They frequented the underbrush of the broadleaf forest in considerable numbers.

The weights of the males ranged from 10.0 to 12.0 grams, with a mean of 11.16 ± 0.30 . Females weighed 8.7, 9.7, 9.9 and 10.2 grams; two of indeterminate sex 9.3 and 13.0 grams.

RHYNCHOCYCLUS BREVIROSTRIS BREVIROSTRIS (Cabanis)

1♂, July 26; 2♂, July 31; 1♂ Aug. 5; 1♀, Aug. 8.

Rather an uncommon resident of the broadleaf forest. The males weighed 22.3, 23.1, 23.8, and 24.1 grams; a female 23.8 grams.

ONCOSTOMA CINEREIGULARE CINEREIGULARE (Selater)

1♂, July 25; 1♀, Aug. 8; 1♂, Aug. 12.

These birds are slightly heavier than a series from the Yucatán Peninsula. The males weighed 7.6 and 7.8 grams; the female 7.4 grams. Peninsular males ranged from 5.2 to 6.7 grams, with a mean of $5.96 \pm .18$ grams and two females 5.0 and 5.6 grams. The species was scarce.

LEPTOPOGON AMAUROCEPHALUS PILEATUS Cabanis

1?, July 24.

This bird, the only example of the species which was seen, was in the heavy forest. It weighed 12.7 grams. Tashian (1952) recorded a female weighing 15.2 grams and Van Tyne (1935) a male weighing 10.8 grams.

PIPROMORPHA OLEAGINEA ASSIMILIS (Selater)

1♀, July 22; 1♀, July 23; 1?, July 24; 1♂, July 27; 2♀, July 28; 1♂, July 29; 1♂, Aug. 18.

The most abundant of the Tyrannidae, and possibly of any

family. It was ubiquitous in the broadleaf forest and was found in lesser numbers in the *monte*. Although lacking in the pines, it was a regular visitor to an isolated fruiting tree (*Clusia* sp.) at the camp. Males weighed 12.7, 13.7, and 14.1 grams; females 12.2, 12.8, 14.8, and 15.2 grams.

XANTHOURA YNCAS VIVIDA Ridgway

1 ♀, July 21; 1 ♂, Aug. 2; 1 ♂, 1 ♀, Aug. 5; 1 ♀, Aug. 9; 1 ♀, Aug. 12; 1 ♀, Aug. 17.

These specimens are intermediate between *X. y. centralis* and *X. y. vivida*. They are nearer to the latter in that ventrally all are well washed with green, but few are as green as typical *X. y. vivida*. In size they fall within, or above, the upper half of the range for *X. y. centralis*, as given by Paynter (1955). All the specimens are worn or in molt; it is possible that in fresh plumage there would be less overlap with *X. y. centralis*.

Two males weighed 72.1 and 87.1 grams; five females from 84.0 to 88.0 grams, with a mean of 86.08 ± 0.68 .

Jays occurred commonly in the *selva*. They were present, but less abundant, in the pines and *monte*.

THRYOTHORUS MACULIPECTUS UMBRINUS Ridgway

1 ♂, 1 ♀, July 22; 1 ♀, July 28; 1 ♀, July 29; 1 ♂, July 30; 1 ♂, Aug. 3; 1 ♂, Aug. 4; 1 ♂, 1 ♀, Aug. 8; 1 ♂, Aug. 11; 1 ♀, Aug. 13; 1 ♀, Aug. 15; 1 ♀, Aug. 18.

It is probable that *T. m. umbrinus* and *T. m. canobrunneus* may be distinguishable by a difference in weight. At Laguna Ocotal, six males ranged from 16.0 to 18.7 grams, with a mean of 16.76 ± 0.47 ; five females from 13.4 to 15.4 grams, with a mean of 14.44 ± 0.46 . On the Yucatán Peninsula (Paynter, 1955), seven males ranged from 13.3 to 15.0 grams, with a mean of 14.36 ± 0.77 ; 11 females from 11.9 to 12.8 grams, with a mean of 11.90 ± 0.95 .

These wrens ranged through the low forest in abundance. Occasionally they were found in the high broadleaf forest and in the brush at the edge of the pine zone.

TROGLODYTES MUSCULUS INTERMEDIUS Cabanis

1 ♂, July 23; 1 ♂, Aug. 2; 1 ♀, Aug. 3; 1 ♂, Aug. 17.

In the scrubby pine burn the species was common, but it was one of the most difficult birds to collect because of its excessively shy nature.

At Ocosingo, where one specimen (male ?) was collected on July 8, and at El Real, where a female and male were taken on July 13 and 14, the species lived in the vicinity of houses and behaved like its northern counterpart, *T. aëdon*.

The weights of the males were 11.1, 11.2, 11.4, and 12.0 grams; those of the females 10.6 and 10.6 grams.

HENICORHINA LEUCOSTICTA PROSTHELEUCA (Selater)

1 ♀, July 22; 1 ♀, July 23; 1 ♀?, July 24; 1 ♂, 1 ♀, July 25; 1 ♂, July 27; 1 ♂, July 30; 1 ♀, Aug. 1; 1 ♂, 1 ♀, Aug. 2; 1 ♀, Aug. 5; 1 ♂, Aug. 6; 1 ♂, Aug. 8; 1 ♂, Aug. 14; 1 ♂, Aug. 18.

A very abundant resident of the undergrowth in the broad-leaf forest.

Seven adult males weighed between 14.4 and 17.3 grams, with a mean of $15.81 \pm .32$; five females from 14.1 to 16.7 grams, with a mean of $15.40 \pm .41$.

HENICORHINA LEUCOPHYRYS CASTANEA Ridgway

1 ♀, July 25; 1 ♂, Aug. 2.

These specimens apparently represent the first record of *H. l. castanea* from Mexico, although Hellmayr (1934) had predicted that it would be found there on the Atlantic slope. The respective weights of the male and female were 16.6 and 16.1 grams.

H. leucophrys and *H. leucosticta* were found in what seemed to be exactly the same habitat. No behavioral differences were noted. The darker breast of *H. leucophrys* could not be recognized in the dark undergrowth, making it impossible to distinguish between the two species. They were, therefore, collected at random. Presumably the ratio between the species in the collection also represents the true ratio at Laguna Ocotal.

MICROCERCULUS MARGINATUS PHILOMELA (Salvin)

1 ♀, July 26; 1 ♂, Aug. 9.

There is no doubt that this wren was uncommon but it was by no means rare, as the dearth of specimens would seem to indicate. Its call is distinctive and was heard about once a day while collecting in the broadleaf forest. It was seldom seen because of its preference for the darkest areas of the forest floor, where it blended ideally with the background.

The male weighed 18.1 grams; the unsexed bird 18.4 grams.

TURDUS ALBICOLLIS LEUCAUCHEN Sclater

1 ♀, July 28; 1 ♂, Aug. 14.

The male retains the juvenal plumage on its throat, upper breast, wing coverts, neck, and pileum. The remainder of the plumage is slaty with a faint wash of olive. The other bird, an adult female, is decidedly olivaceous dorsally; the throat markings are brownish black. It agrees with specimens of *T. a. leucauchen* from Guatemala.

The weight of the male was 66.7 grams; that of the female 70.3 grams.

MYADESTES UNICOLOR PALLENS Miller and Griscom

1 ♂, July 31; 1 ♂, Aug. 1; 1 ♀, Aug. 7; 2 ♀, Aug. 11; 1 ♀, Aug. 12; 1 ♂, Aug. 15; 1 ♂, Aug. 18.

The type of *M. u. veraepacis*, 56 specimens of *M. u. pallens* from Honduras and Nicaragua, one specimen from Veracruz and three from "Mexico" of *M. u. unicolor*, and the present series from Chiapas have been examined. It is concluded that *M. u. pallens* is barely distinguishable from the nominate form, on the basis of its paler ventral color, and that *M. u. veraepacis*, which was described as an intermediate form, is referable to *M. u. pallens*. The supposed differences in size between the forms cannot be confirmed with the present material.

Because this is a montane species, it is presumed that the population north of the Isthmus of Tehuantepec has no contact with that which occurs from Chiapas southward. It is, therefore, not surprising that the series from Laguna Ocotal is referred to the more southern population, *M. u. pallens*. It

is strange, however, that the species does not subspeciate more markedly, since it is a member of a genus whose species are rather plastic.

Adult males weighed 34.1 and 38.2 grams; an adult female 36.1 grams; two males and a female which were in almost complete adult plumage 39.5, 40.7, and 36.3 grams, respectively.

CATHARUS MEXICANUS CANTATOR Griseom

1♂, 1♀, July 25; 1♂, July 30; 1♀, Aug. 5; 1♀, Aug. 12;
1♀, Aug. 15.

Berlioz (1939) recorded the species from Chiapas for the first time, but lacking comparative material was unable to assign his series to a race.

The beautiful song of this thrush was often heard in the late afternoon and sometimes in the morning. It must have been fairly abundant, but it was very difficult to approach. Had it not been for the song, it would have been assumed to be a rare species. It was collected in the darkest parts of the broadleaf forest.

A young, spotted female weighed 29.0 grams; two females which were not quite adult 31.9 and 32.6 grams; two adult males and an adult female 33.1, 37.5, and 32.6 grams, respectively.

SMARAGDOLANIUS PULCHELLUS PULCHELLUS (Selater and Salvin)

1♀, Aug. 3; 1♂, Aug. 12; 1♀, Aug. 13.

Alvarez del Toro (1952) has recorded this species in Chiapas, apparently for the first time. Blake (1953) also lists the bird from there but has informed me (*in litt.*), that his citation of the race *S. p. verticalis* from Chiapas is a *lapsus*.

Being a species which ranges in the tops of trees it is difficult to judge its abundance. It seemed to be uncommon. The male weighed 25.3 grams; the females 24.3 and 26.2 grams.

HYLOPHILUS OCHRACEICEPS OCHRACEICEPS Selater

1♂, 1♀, July 25; 1♂, July 27; 1♂, Aug. 1; 1♀, Aug. 12.

Prior to Alvarez del Toro's book (1952) the species does not seem to have been noted from Chiapas. It was common at Laguna Ocotol in the broadleaf forest.

Males weighed 11.1, 11.4, and 11.5 grams; females 10.5 and 10.8 grams.

MNIOTILTA VARIA (Linnaeus)

1 ♀, Aug. 12; 1 ♀, Aug. 15.

Black and White Warblers were first seen on August 11. The birds weighed 10.7 and 10.8 grams.

PARULA AMERICANA INORNATA Baird

1 ♀, Aug. 12.

Parula "*pitiayumi*" appears to be only a morphologically pronounced subspecies group of *P. americana*. Unless sympatry can be shown to exist, the logical course seems to be to treat the groups as conspecific.

A pair of the warblers was in a flowering tree in the *monte* on August 12. No others were seen while at the lake.

The specimen weighed 6.9 grams, as did a female collected at Ocosingo on July 7.

DENDROICA GRACIAE DECORA Ridgway

1 ♀, July 22; 1 ♂, July 30; 1 ♀, Aug. 18; 2 ♂, Aug. 19.

The species was abundant in the tops of the pines. It was noted in the broadleaf forest a few times.

The specimens exhibit no approach toward *D. g. ornata*, a distinctive form, which has been found in western Chiapas (e.g., Edwards and Lea, 1955) but for which there seems to be no published report in eastern Chiapas. In the Museum of Comparative Zoology there are, however, specimens referable to this race from Santa Rosa (Escuintla) and Nuevo Amatenango, localities near the Guatemalan border.

The respective weights of three males and a female were 7.3, 8.5, 8.7 and 7.6 grams. One bird was host to the hippoboscid *Ornithoctona fusciventris*.

SEIURUS MOTACILLA (Vieillot)

1 ♂, July 25; 1 ♀, Aug. 2; 1 ♂, Aug. 13.

After the first of August, Louisiana Waterthrushes were seen

at the rate of about one per day. The specimen collected on July 25 is a very early arrival, but at Palenque in 1949 Tashian (1952) observed the species on July 12.

The male weighed 18.4 grams; the females 16.7 and 18.9 grams.

GRANATELLUS SALLAEI SALLAEI (Bonaparte)

1 ♀?, Aug. 10; 1 ♂, Aug. 13.

A rare inhabitant of the low forest at the end of the lake. The male weighed 14.0 grams, suggesting that this race is heavier than *G. s. boucardi*, six males of which are known to have ranged from 9.2 to 10.6 grams, with a mean of $10.00 \pm .22$ (Paynter, 1955). The bird whose sex could not be determined with certainty weighed 11.6 grams.

I have examined the type of *G. s. griscomi* van Rossem, a male, and find, as the describer claimed (1934), that dorsally it is less slaty and gray than most specimens of the species. The supposed differences in the distribution and shade of the red of the underparts, and of the gray on the throat, cannot be recognized by me.

The bird was received, as a mount, by the Museum of Comparative Zoology in 1880. It is presumed to have been collected at least a few years earlier. It was, therefore, well over fifty years old, at a minimum, when named as the type. It is soiled and has the oily texture that is often noticed in specimens which have been mounted and on display for many years. The characters ascribed to the race are without doubt functions of age and dirt. This belief is strengthened when old and fresh specimens of *G. s. boucardi*, or of *G. s. sallaei*, are compared. The older specimens are often noticeably darker.

MYIOBORUS MINIATUS INTERMEDIUS (Hartlaub)

1 ♂, July 26; 1 ♂, July 27; 1 ♂, July 31; 1 ♀, Aug. 3; 1 ♂, Aug. 13;
1 ♂, Aug. 14; 1 ♂, Aug. 16; 1 ♂, 2 ♀, Aug. 17; 1 ♂, Aug. 18;
2 ♂, Aug. 19.

The redstart was abundant in the *selva*. Two females weighed 9.0 and 9.1 grams; ten males ranged from 8.2 to 9.6 grams, with a mean of 8.86 ± 0.14 .

BASILEUTERUS CULICIVORUS CULICIVORUS (Lichtenstein)

1 ♂, 1 ♀, July 22; 1 ♀, July 23; 1 ♀, 1 ♂, July 24; 1 ♀, July 25;
1 ♂, July 26.

These were among the most abundant birds at the lake. They occurred in all types of habitat, with the exception of the pines, although they were most often found in the higher broadleaf forest.

Females weighed 8.8, 10.0, 10.3, and 10.4 grams; two males 9.8 grams each.

BASILEUTERUS RUFIFRONS SALVINI (Cherrie)

1 ♂, July 14; 1 ♀, July 20; 1 ♂, July 23; 1 ♂, 1 ♀, Aug. 12.

This species replaced *B. culicivorus* in the pines, where it was common but usually too high to collect. Two males weighed 11.4 and 11.8 grams; two females 10.3 and 10.8 grams.

Todd (1929) and Griscom (1932) to the contrary, it appears that Ridgway (1902) was correct in treating *dclatirii*, *salvini*, and *rufifrons* as conspecific. Griscom (1932) chose to regard each as a distinct species, claiming that all three forms are sympatric in the western cordillera of Guatemala, and that *salvini* and *rufifrons* are sympatric in Vera Paz. However, it is significant to note that one or another of these forms has been collected at approximately twenty localities in Guatemala (*vide* Griscom, 1932, and Todd, 1929, for lists), but at no given place has more than a single form been taken. Even when two collectors' stations are adjacent, there seems always to be a difference in their altitudes. Thus sympatry does not appear to exist. No intergradation between *B. r. dclatirii* and either *B. r. rufifrons* or *B. r. salvini* is known but this may be of little significance since even in the comparatively well-studied region of Veracruz integration between *B. r. rufifrons* and *B. r. salvini* was undetected until 1943 (Wetmore).

COEREBE FLAVEOLA MEXICANA (Sclater)

1 ♂, July 28; 1 ♀, Aug. 11; 1 ♂, Aug. 16.

Bananquits were rare and found only in the *monte*.

A mature male and female weighed 10.0 and 8.7 grams, respectively. An immature male 10.7 grams. The adult male had

fully enlarged testes. It was one of the few species exhibiting sexual activity at this season.

AMBLYCERCUS HOLOSERICUS HOLOSERICUS (W. Deppe)

1 ♂, Aug. 11.

This bird, which weighed 67.0 grams, was found in a dense tangle of vines near the shore of the lake. No more were seen.

ICTERUS MESOMELAS MESOMELAS (Wagler)

1 ♂, July 27; 1 ♀, Aug. 12.

The male weighed 42.7 grams; the female 35.0 grams. *Ornithoctona fusciventris* was found on the latter.

The dearth of clearings meant that habitats for most of the Icteridae were lacking. The almost total absence of orioles was one of the impressive ornithological features of the Laguna Ocotal region.

An oropendola was seen in the forest by one of the party, but whether it was *Zarhynchus wagleri* or *Gymnostinops montezuma* is unknown.

TANAGRA LAUTA LAUTA Bangs and Penard

1 ♂, Aug. 2; 1 ♀, Aug. 4; 1 ♂, Aug. 17.

One bird was taken in the pines and the others in the low forest. The species was rather uncommon.

The male collected August 2 had slightly enlarged gonads; that taken August 17 retained about half of its juvenal plumage but had fully enlarged testes. Breeding in transitional plumage has been reported before (e.g., Skutch, 1954).

The first male weighed 14.8 and the second 16.4 grams; the female 17.6 grams.

TANAGRA GOULDI GOULDI (Selater)

1 ♀, July 21; 1 ♂, July 23; 1 ♀, July 26; 1 ♂, 1 ♀, July 31; 1 ♀, Aug. 4; 1 ♂, Aug. 5; 1 ♀, Aug. 6; 1 ♂, Aug. 14; 1 ♂, Aug. 16; 1 ♂, Aug. 18.

These were the most abundant of the tanagers, ranging through the broadleaf forest to the edge of the pines.

Six males had a mean weight of 13.73 ± 0.11 grams, with a

range from 12.7 to 14.5. The mean of five females was 14.00 ± 0.47 grams and their range 12.9 to 15.3.

TANGARA NIGROCINCTA LARVATA (Du Bus)

1 ♂, 1 ♀, July 28; 1 ♀, Aug. 6; 1 ♂, Aug. 12; 1 ♀, Aug. 13; 1 ♀, Aug. 18.

The specimens were taken in either the *monte* or the *Clusia* tree at our camp.

Males weighed 18.6 and 19.7 grams; females 20.2, 20.3, and 21.9 grams.

THRAUPIS ABBAS (W. Deppe)

1 ♀, July 25; 1 ♀, July 28; ♀, Aug. 1; 1 ♀, Aug. 9; 1 ♂, Aug. 13.

The species was seldom noted in the tropical evergreen forest, but was very abundant in the pines, frequently moving through the tops of the trees in flocks of about ten individuals.

A male weighed 46.2 grams; females 40.3, 46.2, 47.4, and 48.4 grams.

PHILOGOTHAUPIS SANGUIOLENTA SANGUIOLENTA (Lesson)

1 ♂, July 25; 1 ♂, July 26; 1 ♂, Aug. 12; 1 ♀, Aug. 13.

The weights of the males were 38.8, 40.0, and 44.2 grams.

The species was moderately common but more shy than most tanagers. It came to exposed areas at times but generally was present in the heavier *selva*.

PIRANGA LEUCOPTERA LEUCOPTERA (Trudeau)

1 ♀, July 22; 1 ♂, Aug. 4; 1 ♂, Aug. 11; 1 ♀, Aug. 16; 2 ♂, Aug. 18.

Usually these birds were found in small flocks along the edges of trails and in the *monte*.

The mean weight of five males was $16.68 \pm .32$. They ranged from 15.5 to 17.4 grams.

One specimen harbored the bird-fly *Ornithoctona fusciventris*.

HABIA RUBICA RUBICOIDES (Lafresnaye)

1 ♀, July 22; 1 ♂, July 23; 1 ♀, July 24; 1 ♀, July 30; 1 ♂, 2 ♀, July 31; 1 ♂, Aug. 8; 1 ♀, Aug. 11; 1 ♂, Aug. 16; 1 ♂, Aug. 17; 3 ♂, Aug. 18.

This form was more common than *H. gutturalis*. Both species occurred throughout the broadleaf forest, with occasional appearances in the *monte*. There was no noticeable difference in habitat preference between the two forms.

These specimens lend credence to the suggestion (Paynter, 1955) that *H. r. nelsoni* may weigh less than *H. r. rubicoïdes*, although this still cannot be proved. Six adult male *H. r. rubicoïdes* ranged from 35.8 to 40.5 grams, with a mean of $38.00 \pm .71$; five adult females from 27.8 to 33.6 grams, with a mean of 31.04 ± 1.07 . Adult males of typical *H. r. nelsoni* were reported (Paynter, 1955) to weigh 27.7, 30.4, 31.5, and 32.1 grams; a female 27.5 grams.

IIABIA GUTTURALIS SALVINI (Berlepsch)

1 ♀, July 23; 1 ♂, July 24; 1 ♂, July 27; 1 ♂, July 30.

The unsexed specimen weighed 42.9 grams; the remaining birds all of which are immature, 42.7, 43.6, and 43.7 grams.

This series is unsatisfactory for subspecific determination. It seems, however, to be more similar to immature specimens from the range of *H. g. salvini* than to the limited material I have seen of immature *H. g. littoralis*, a weak or possibly invalid, race.

CHLOROSPINGUS OPHTHALMICUS DWIGHTI Underdown

1 ♂, 1 ♀, July 21; 1 ♂, 1 ♀, July 22; 2 ♂, 1 ♀, July 23; 1 ♂, 1 ♀, July 24; 1 ♂, Aug. 1; 1 ♂, Aug. 2; 1 ♀, Aug. 7; 1 ♀, Aug. 10.

Along the edges of trails and within the broadleaf forest, wherever there was low vegetation, these birds swarmed.

Adult males weighed 18.6, 18.7, and 19.7 grams; females 17.2 and 17.4 grams. Juvenal males weighed 18.6, 18.6, 18.7, and 18.8 grams; females 16.0 and 17.3 grams.

CHLOROPHANES SPIZA GUATEMALENSIS Sclater

1 ♀, July 31.

Only this bird was seen. It weighed 22.1 grams and was fatty.

CYANERPES CYANEUS CARNEIPES (Sclater)

1 ♂, July 20; 1 ♂, July 24; 1 ♂, July 25; 1 ♂, July 30; 1 ♀, Aug. 18.

The species was most often seen in the *Clusia* tree at the camp.

Adult males weighed 13.1 and 13.3 grams; an immature male 12.2 grams; females 12.3 and 13.4 grams.

SALTATOR ATRICEPS ATRICEPS (Lesson)

1 ♂, Aug. 9; 1 ♀, Aug. 10.

The gonads of the male were very enlarged and that of the female moderately enlarged.

None of the saltators was common, but this was the most frequently observed of the three. All the forms frequented the brush where the broadleaf and pine forests joined.

The weights of the male and female were 77.3 and 85.5 grams, respectively.

SALTATOR MAXIMUS GIGANTOIDES Cabanis

1 ♀, Aug. 3; 1 ♂, Aug. 12.

These specimens have only a trace of green on the pelium, leaving no doubt that they are referable to this race rather than to *S. m. magnoides*, which has been recorded from near Comitán (Berlioz, 1939).

The male, which had enlarged testes, weighed 52.3 grams. The female, whose ovary was slightly enlarged, weighed 48.4 grams.

SALTATOR COERULESCENS YUCATENENSIS Berlepsch

1 ♂, July 27.

To find this race at Laguna Ocotal was unexpected, but the specimen is pale, has only a faint wash of buffy on the breast, and has a light crissum, all characters differentiating *S. c. yucatenensis* from *S. c. grandis*. Although it may be an aberrant bird, additional specimens from the region will probably confirm the identification, inasmuch as Brodkorb (1943) found a series from eastern Tabasco to be closer to *S. c. yucatenensis* than to *S. c. grandis*.

The bird, which was reproductively active, weighed 54.2 grams.

CARYOTHAUSTES POLIOGASTER POLIOGASTER (Du Bus)

1 ♂, 1 ♀, Aug. 10; 1 ♀, Aug. 18.

Flocks of these birds were seen regularly in one area of transi-

tion between the *selva* and *ocotal*, where the vegetation was fairly high but not dense. They were seldom seen elsewhere.

The male weighed 48.6 grams; the females 49.3 and 50.7 grams.

CYANOCOMPSA CYANOIDES CONCRETA (Du Bus)

1 ♂, July 27; 1 ♀, July 31; 1 ♂, Aug. 14; 1 ♂, Aug. 19.

The male taken July 27 had enlarged testes. That collected on August 14, an immature bird, was host to *Ornithoctona fusciventris*.

Adult males weighed 30.5 and 30.9 grams; an immature male 27.6 grams; an adult female 30.4 grams.

SPOROPHILA TORQUEOLA MORELLETI (Bonaparte)

1 ♂, July 26; 1 ♂, Aug. 8; 1 ♂, Aug. 13.

In the vicinity of the marsh near the campsite, seedeaters were seen and heard daily. A few were also found in the pine burn, but none elsewhere.

The bird taken on August 13, which is immature, weighed 8.7 grams. The remaining birds were in full breeding condition and weighed 8.9 and 9.6 grams.

ORYZOBORUS FUNEREUS Selater

1 ♂, 1 ♀, Aug. 2.

The birds, both of which had fully enlarged gonads, were collected in the pine burn. The area was searched for additional birds, but this pair was the only one found. The species was reported from Chiapas once before (Brodkorb, 1943).

The weights of the male and female were 14.3 and 14.7 grams, respectively.

ATLAPETES ALBINUCHA (Lafresnaye and d'Orbigny)

1 ♂, July 30; 1 ♂, Aug. 3.

The August 3 specimen is a fledgling, which was barely able to fly; the other a juvenal. Both birds were taken in the underbrush of the pine burn. Only one other was seen during the month at the site.

The fledgling weighed 32.5 and the juvenal 33.2 grams.

DISCUSSION

One hundred and twenty-two species of birds were collected or observed during the period spent at Laguna Ocotal. Of this number, 119 are presumed to breed in the vicinity and three are known to be visitors (*Empidonax minimus*, *Mniotilta varia*, and *Seiurus motacilla*).

The avifauna of the lowlands to the north and to the east of the Selva Lacandona is fairly well known, affording a useful basis for comparison with that which was found at Laguna Ocotal. Brodkorb (1943) has surveyed the birds of Tabasco and adjacent areas in Veracruz, Campeche, and Chiapas; Tashian's report (1952) on the birds of Palenque, Chiapas, is an informative supplement. To the east, the district of Petén, Guatemala, has been investigated by Van Tyne (1935) and Taibel (1955). The localities encompassed by these papers are situated at altitudes below 250 meters, with a few insignificant exceptions. A large part of the region is covered by "high evergreen forest," to use the terminology of Miranda (1952). However, the composition of the forest differs from that at Laguna Ocotal and is the type commonly called "rain forest." The distinction between the high evergreen forest at Laguna Ocotal and that which is found at lower altitudes is considered in the paper introducing this series pp. 193-199).

The birds in the highlands contiguous with the Selva Lacandona are not so well known. Berlioz's (1939) report on a collection from the district of Comitán is the nearest approach to a detailed study, but it seems that the collector (Mario del Toro Avilés) was selective and did not attempt to obtain representatives of all the species in the region. The paucity of raptorial and aquatic species is particularly noticeable. The collector spent a few days, in April and October, at Comitán (alt. 1650 m.), a sizable town on a plain, with oak and coniferous forests a short distance away. He collected for 20 days in August and for four days in October at Juncana (alt. 1645 m.), a village situated in the oaks and pines, 40 kilometers southeast of Comitán. From May to August he worked at Santa Rosa, which, Prof. Brodkorb (*in litt.*) informs me, is a finca, at an altitude of about 1200 meters, near the Guatemala border and east of Laguna Montebello, roughly seventy kilometers southeast of

Comitán. According to Prof. Brodkorb, this region is characterized by high rainfall and by the presence of the Sweet Gum (*Liquidambar styraciflua*). Miranda (1952) maps the area within the zone of "temperate deciduous woods," one of whose key species is *Liquidambar*.

When the resident birds at Laguna Ocotal are compared with those known from adjacent Veraacruz, Tabasco, Chiapas, Campeche, and Petén (Brodkorb, 1943; Tashian, 1952; Van Tyne, 1935; Taibel, 1955), it is seen (Table 1, p. 284) that 24 of the 119 species (22 per cent) have not been found in the lowlands encompassed by these studies. Of these 24 birds, four (*Spizaëtus tyrannus*, *Micrastur semitorquatus*, *M. ruficollis*, and *Chlorophanes spiza*) are uncommon species which have been collected at low altitudes nearby, e.g., on the Yucatán Peninsula (Paynter, 1955), and in time probably will be found in the regions under consideration. The 20 species remaining are characteristic of higher elevations, with none having been found below roughly 300 meters, at least in northern Middle America.

With the exception of the pines, the vegetation at Laguna Ocotal is physiognomically similar to that of the lowlands. Therefore, the presence of the conifers might logically seem to be the cause of the difference in composition of the two avifaunas. However, this is not the case. Only four species are confined to the pines at Laguna Ocotal. These are *Lepidocolaptes souleyetii*, *L. affinis*, *Contopus pertinax*, and *Basileuterus rufifrons*; *Dendroica graciae* was abundant in the pines but was seen in the broadleaf forest on a few occasions. Of these five species, only *Lepidocolaptes affinis* and *Dendroica graciae* do not occur in the adjacent lowlands. More subtle differences in the environments must be responsible for the discrepancy between the avifaunas of the two regions.

If the resident birds of Laguna Ocotal are compared with those listed by Berlioz (1939) for the District of Comitán, Chiapas (2100 to 1650 m.), it is seen (Table 2, p. 285) that 54 species (45 per cent) have not been recorded at the higher elevations. Owing to what certainly was discriminating collecting in the highlands (e.g., *Cathartes aura* is not recorded), the difference between the two avifaunas is doubtless exaggerated, but still it must be substantial. Most of the species in Table 2 are forms which frequent lower altitudes and would be unexpected in the District

of Comitán. It is interesting to note that of the 24 birds listed in Table 1 as not occurring in the nearby lowlands, 18 are recorded in the highlands (Berlioz, 1939), including the so-called "lowland forms" *Micrastur ruficollis* and *Chlorophanes spiza*.

From this it may be concluded that the composition of the avifauna of Laguna Ocotal is intermediate between that of the adjacent lowlands and highlands, with a stronger element from the lowlands. The presence of pines at Laguna Ocotal, the one strikingly marked vegetational difference between the lowlands and the lake district, has almost no effect on the composition of the avifauna.

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TABLE 1

Species of birds found at Laguna Ocotal but not recorded from adjacent lowlands.

<i>Accipiter striatus</i>	<i>Myrmotherula schisticolor</i> *
<i>Spizaëtus tyrannus</i>	<i>Empidonax flavescens</i> *
<i>Micrastur semitorquatus</i>	<i>Microcerculus marginatus</i> *
<i>Micrastur ruficollis</i> *	<i>Myadestes unicolor</i> *
<i>Abeillia abeillei</i> *	<i>Catharus mexicanus</i> *
<i>Amazilia beryllina</i>	<i>Smargdolanus pulchellus</i>
<i>Eupherusa eximia</i> *	<i>Parula americana</i>
<i>Lampornis viridi-pallens</i> *	<i>Dendroica graciae</i> *
<i>Xiphorhynchus erythropygius</i> *	<i>Myioborus miniatus</i> *
<i>Lepidocolaptes affinis</i> *	<i>Chlorospingus ophthalmicus</i> *
<i>Anabaccerthia striaticollis</i> *	<i>Chlorophanes spiza</i> *
<i>Sclerurus mexicanus</i> *	<i>Atlapetes albivucha</i> *

*Recorded from Comitán District (Berlioz, 1939).

TABLE 2

Species of birds found at Laguna Ocotal but not recorded from adjacent highlands.

<i>Phalacrocorax brasilianus</i>	<i>Dendrocincla anabatina</i>
<i>Butorides virescens</i>	<i>Dendrocincla homochroa</i>
<i>Sarcoramphus papa</i>	<i>Dendrocolaptes certhia</i>
<i>Cathartes aura</i>	<i>Lepidocolaptes souleyetii</i>
<i>Elanoides forficatus</i>	<i>Xenops minutus</i>
<i>Accipiter striatus</i>	<i>Dysithamnus mentalis</i>
<i>Buteogallus urubitinga</i>	<i>Platypsaris aglaiae</i>
<i>Spizaetus tyrannus</i>	<i>Tyrannus melancholicus</i>
<i>Herpetotheres cachinnans</i>	<i>Megarhynchus pitangua</i>
<i>Micrastur semitorquatus</i>	<i>Myiozetetes similis</i>
<i>Crax rubra</i>	<i>Myiobius barbatus</i>
<i>Penelope purpurascens</i>	<i>Onychorhynchus coronatus</i>
<i>Ortalis vetula</i>	<i>Leptopogon amaurocephalus</i>
<i>Aramus guarauna</i>	<i>Xanthoeca yncas</i>
<i>Aramides cajana</i>	<i>Henicorhina leucosticta</i>
<i>Laterallus ruber</i>	<i>Smaragdolanus pulchellus</i>
<i>Columba nigrirostris</i>	<i>Hylophilus ochraceiceps</i>
<i>Ara macao</i>	<i>Parula americana</i>
<i>Amazilia candida</i>	<i>Granatellus sallaei</i>
<i>Amazilia beryllina</i>	<i>Icterus mesomelas</i>
<i>Trogon massena</i>	<i>Tanagra laeta</i>
<i>Trogon violaceus</i>	<i>Tanagra gouldi</i>
<i>Chloroceryle aenea</i>	<i>Tangara nigrocincta</i>
<i>Pteroglossus torquatus</i>	<i>Habia gutturalis</i>
<i>Ramphastos sulfuratus</i>	<i>Saltator coerulescens</i>
<i>Ceanturus pucherani</i>	<i>Cyanocompsa cyanoides</i>
<i>Veniliornis fumigatus</i>	<i>Oryzoborus funereus</i>